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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,848	07/12/2005	Noriaki Oku	Q88921	6754

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EXAMINER	
DANG, THUAN D	

ART UNIT	PAPER NUMBER
1771	

NOTIFICATION DATE	DELIVERY MODE
10/19/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/541,848	OKU ET AL.	
	Examiner	Art Unit	
	THUAN D. DANG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Codignola (3,127,452).

Codignola discloses a process for hydrogenating styrene by passing upwardly a liquid containing alpha-methylstyrene and a gas containing hydrogen thru a packed bed of a solid hydrogenation catalyst (fig. 1; col. 1, lines 23-28; col. 2, lines 8-47).

The temperature and pressure of the reaction can be found on column 1, lines 30-34.

Codignola does not disclose (1) how much the superficial velocity of hydrogen gas is when it passes upwardly the catalyst bed and (2) the size of the catalyst (3) the mole ratio of hydrogen and olefin.

However, these are considered to be the parameters of the chemical process. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Codignola process by selecting appropriate superficial velocities and the size of the catalyst to arrive at the applicants' claimed process except that unexpected results can be demonstrated.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Codignola process to use an appropriate amount of hydrogen required to hydrogenate the olefinic bonds.

Response to Arguments

Applicant's arguments filed 7/26/2010 have been fully considered but they are not persuasive.

The argument that the important features of the present invention are the superficial velocity of the gas containing hydrogen, and the flow direction of the gas containing hydrogen

and the liquid containing an olefin through a solid hydrogenation catalyst bed is not persuasive since as discussed in the above rejection, these values are reaction parameters which must obviously be selected to optimize the reaction. Applicants do not show any criticality for these selected values except comparison between the operation of specific processes at superficial velocity of the gas at 7 and 6.5 cm/sec (in the claimed range of from 3 to 10 cm/sec) versus 2.7 and 2.8 cm/sec (less than 3 cm/sec). Applicants do not show data for the entire claimed range of superficial velocity of the gas (3 to 10 cm/sec). Especially, no data for any superficial velocity of more than to for comparison. Therefore, these data are not enough to support unexpected results for running the claimed process at a superficial velocity of from 3 to 10 cm/sec.

The argument that Codignola's exemplified process is operated outside of the claimed range of superficial velocity of the gas is not persuasive since Codignola's invention is not limited by examples as discussed in the previous response (see below).

Below is the response by the examiner in the previous Office action which can be also applied in this Office action:

The argument that when the superficial velocity of the gas is lower than 3.0 cm/sec, the apparent reaction rate lowers, the superficial velocity is higher than 10 cm/sec, a pressure loss of the packed bed may increase, as a result, (1) yield is lowered due to the tar formation and the catalyst is tear and worn, correspondingly is not persuasive since these results are expected due to the residence time of the reaction and the flow rate of reactants. When a reactant stays in the reaction zone more than the optimum time for the conversion to the desired product, it may be converted to undesired product or by-product in excessive amounts. In contrast, it is expected that an excessive flow rate of reactants will decrease the conversion of the reactants and may damage the catalyst as well as reaction bed.

The argument that the size of the catalyst is usually 0.5 to 10 mm is correct. Therefore, it is expected that the catalyst used in the Codignola process will have the size usually used in the industry.

The argument that it is clear for ordinary skill in art that the effect of the present invention is not specifically limited only to the hydrogenation of alpha-methylstyrene but also applicable to hydrogenation of olefins conducted by using hydrogen gas in the presence of a solid catalyst since applicants stand on the point that the **claimed** process yields unexpected results (it is incorrect as discussed by examiner above). In contrast, as discussed in the previous office action, the claimed process is not the process in examples. Therefore, assuming arguendo that the exemplified process yielded unexpected results (it is not true), this did not mean that the claimed process (totally different from the process in examples) also yields unexpected results since the exemplified process and the claimed process are operated under different conditions, using different reactants. It is reminded that evidence of unobviousness must be commensurate in scope with the claimed. *In re Kulling* 14 USPQ 2d 1056, 1058 (Fed. Cir. 1990*); In re Clemans* 206 USPQ 389 (CCPA 1980); *In re Dill* 202 USPQ 805, 808 (CCPA 1979); *In re Greenfield* 197 USPQ 227 (CCPA 1978); *In re Lindner* 173 USPQ 356, 358 (CCPA 1972); I*n re Hyson* 172 USPQ 399 (CCPA 1972); *In re Tiffin* 171 USPQ 294 (CCPA 1971*); In re Mclaughlin* 170 USPQ 209 (CCPA 1971); *In re Kennedy* 168 USPQ 587 (CCPA 1971); *In re Law* 133 USPQ 653 (CCPA 1962).

The argument that the superior effect of the presently claimed superficial velocity of the gas on the reaction rate per unit is also evidenced by examples is not persuasive since the claimed process is not the processes disclosed in the examples. There are so big differences between the claimed process and the process disclosed in examples: (copper/palladium catalyst versus any solid hydrogenation catalyst); (alpha-methyl styrene versus any olefin (except claim 4)); (a specific pressure, namely 1.0 Mpa versus any pressure); (superficial velocity of the gas at 6.5 to 7cm/sec versus 3 to 10 cm/sec); (a specific temperature, namely 180-200°C versus any temperature). Therefore, it is incorrect to say that the superficial velocity effects to the **claimed** process since the claimed process is not the processes in examples. The examiner also notes the comparative examples in the specification in the consideration of the effect of superficial velocity on the reaction. However, it is noted that other variables are not kept constant, so that the change of superficial velocity can be compared. It has been established by the patent law that the cause and effect sought to be proven is lost here in the welter of unfixed variables. *In re Heyna*, 360 F.2d 222, 228, 149 USPQ

692, 697 (CCPA 1966). Applicants are also reminded that it has been established that evidence of unobviousness must be commensurate in scope with the claims. *In re Kulling* 14 USPQ 2d 1056, 1058 (Fed. Cir. 1990); *In re Clemans* 206 USPQ 389 (CCPA 1980); *In re Dill* 202 USPQ 805, 808 (CCPA 1979); *In re Greenfield* 197 USPQ 227 (CCPA 1978); *In re Lindner* 173 USPQ 356, 358 (CCPA 1972); In *re Hyson* 172 USPQ 399 (CCPA 1972); *In re Tiffin* 171 USPQ 294 (CCPA 1971); *In re Mclaughlin* 170 USPQ 209 (CCPA 1971); *In re Kennedy* 168 USPQ 587 (CCPA 1971); *In re Law* 133 USPQ 653 (CCPA 1962).

In argument, applicants argue that in examples, Codignola uses a superficial velocity of gas of less than the claimed range of the same is not persuasive since the Codignola process is not limited by examples since it has been held that a disclosure in a reference is not limited to its specific illustrative examples, but must be considered as a whole to ascertain what would be realistically suggested thereby to one ordinary skill in the art. *In re Uhlig*, 54 CCPA 1300 376 F2d 320; 153 USPQ 460.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUAN D. DANG whose telephone number is (571)272-1445. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THUAN D DANG/
Primary Examiner, Art Unit 1797